Math 9 5.6 Solving Word Problems Name:

Translating English into Math

English	Math
7 more than a number x	$7+x$ or $x+7$
Twice a number	$2x$
4 less than a number	$x-4$
3 more than one-half a number	$\frac{1}{2}x+3$
John's age in 5 years, if John is **j** years now	$j+5$
Rachel's age last year if she is **r** years now	$r-1$
If the width is **w**, find the length if the length is 4 more than twice the width	$l=2w+4$
If the length is L, find the width if the width is 5 less than the length	$w=l-5$

Lot Statement

(1)
- ✓ Sketch a diagram or create a chart
- ✓ Identify the UNKNOWN or UNKNOWNS, for example Mary's age now or the width

(2) ✓ Create an equation that describes the story

(3) ✓ Solve the equation

(4) ✓ Answer the question in a sentence

EXAMPLES

Jesse is 1 year older than three times as old as Ryan. In 6 years, the sum of their ages will be 61. How old are they now?

	Now	In 6 years
Jesse	$3r+1$	$(3r+1)+6 = 3r+7$
Ryan	$r = 12$	$r+6$
Total		61

Jesse + Ryan = 61

$(3r+7)+(r+6)=61$

$3r+7+r+6=61$

$3r+r+7+6=61$

$4r+13=61$ -13 -13

$\frac{4r}{4} = \frac{48}{4}$

$r = 12$

Jesse $3(12)+1 = 37$

- Ryan is 12
- Jesse is 37

A number is doubled, and then decreased by 5. If the result is 9, find the original number.

- Let x be the number

$2x-5=9$

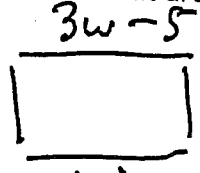
$+5 \quad +5$

$\frac{2x}{2} = \frac{14}{2}$

$x = 7$

The number is 7

The perimeter of a rectangle is 46 cm. If the length is 5 cm less than three times the width. What are the dimensions



$3(7)-5$

$21-5$

$l = 16$

The dimensions are 16 by 7

FORMULA: $2l+2w=P$

$2(3w-5)+2(w)=46$

$6w-10+2w=46$

$8w-10=46$

$+10 \quad +10$

$\frac{8w}{8} = \frac{56}{8}$

$w = 7$

Ma 9 5.6 Assignment Name: Key

1. John is three times as old as Amy now. In 4 years the sum of their ages will be 36, find their ages now.

$(3a+4)+(a+4)=36$
$3a+4+a+4=36$
$4a+8=36$
$4a=28$
$\boxed{a=7}$

	Now	In 4 years
John	$3a=21$	$3a+4$
Amy	$a=7$	$a+4$
Total		36

John is 21, Amy is 7

2. Paul is 11 years older than Rennie now. In 5 years the sum of their ages will be 23. Find their ages today.

$(r+16)+(r+5)=23$
$2r+21=23$
$2r=2$
$r=1$

	Now	In 5 years
Paul	$r+11=12$	$r+5+11$ $=r+16$
Rennie	$r=1$	$r+5$
Total		23

Rennie is 1, Paul is 12

3. A number is tripled, and then decreased by 7. The result is ~~31~~ 32. What is the number? **Let x be the number**

$3x-7=32$
$3x=39$
$x=13$

is 13

4. A number is added to three times itself. Then, then decreased by 6. The result is 38. What is the number? **Let x be the number**

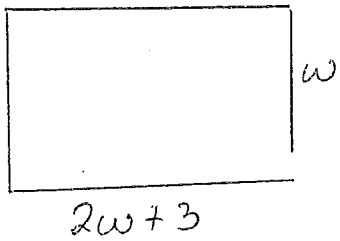
$x + 3x - 6 = 38$

$4x - 6 = 38$

$4x = 44$

$x = 11$

5. A rectangle has a perimeter of 60 cm. The length is 3 cm more than twice the width. What are the dimensions? **Sketch and label a diagram.**
Let w = the width



$2l + 2w = P$

$2(2w+3) + 2w = 60$

$4w + 6 + 2w = 60$

$6w + 6 = 60$

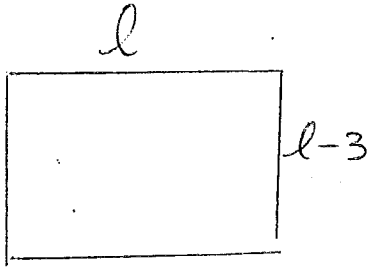
$6w = 54$

$w = 9$

$l = 21$

The dimensions are 21 cm by 9 cm

6. The width of a rectangle is 3 less than the length. If the perimeter is 34 cm, what are the dimensions? **Sketch and label a diagram.**
Let l = the length



$2l + 2w = P$

$2l + 2(l-3) = 34$

$2l + 2l - 6 = 34$

$4l - 6 = 34$

$4l = 40$

$l = 10$

10cm by 7cm

7. When 8 is added to three times a number, the result is 41. What is the number?
Let x be the number

$8 + 3x = 41$
$3x = 33$
$x = 11$

$x = 11$

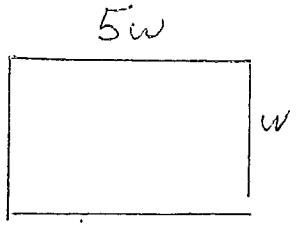
8. Next year, Paul will be twice as old as Francis. And the sum of their ages is 42.
Find their ages today

$2(f+1) + f+1 = 42$
$2f+2 + f+1 = 42$
$3f + 3 = 42$
$3f = 39$
$f = 13$

	Now	Next year
Paul	$2f+1$	$2(f+1)$ or $2f+2$
Francis	$f = 13$	$f+1$
Total		42

Francis is 13 and Paul is 27

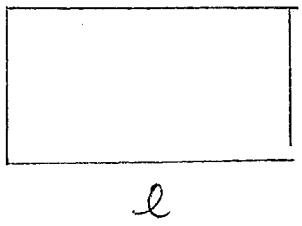
9. The perimeter of a rectangle is 126 cm. If the length is five times the width, find the dimensions of the rectangle. **Let the width be w**



$2l + 2w = P$
$2(5w) + 2w = P$
$10w + 2w = 126$
$12w = 126$
$w = 10.5$
$L = 5(10.5)$
$= 52.5$

52.5 cm by 10.5 cm

10. The width of a rectangle is 3 cm more than one-half the length. If the perimeter is 54 cm, find the dimensions. **Let the length be L**



$2l + 2w = P$
$2l + 2(\frac{1}{2}l + 3) = 54$
$2l + l + 6 = 54$
$3l + 6 = 54$
$3l = 48$
$l = 16, \ w = 11$

11. A number is doubled, and then increased by 5. That value is the same as the same number tripled then decreased by 2. What is the number?
Let x be the number

$2x + 5 = 3x - 2$
$7 = x$

12. Teresa is 1 year older than twice Alex's age. In 7 years, the sum of their ages will be 52. How old are they now?

	Now	In 7 years
Teresa		
Alex	**a**	
Total		